STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Division of Fish and Wildlife
Marine Fisheries

Management Plan for the Shellfish Fishery Sector

developed in association with the
commercial fishing licensing provisions set forth in the
"Rules and Regulations Governing the Management of Marine Fisheries"

*****DRAFT#1*****

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Introduction

During the 2002 legislative session the General Assembly adopted the Commercial Fisheries Management Act, implementing a new commercial fishing license system and ending the moratorium on the issuance of new commercial fishing licenses that has been in place since 1995. One purpose of the act was to enable new entrants into commercial fisheries; however, provisions providing the authority to limit access were included. Fisheries identified for consideration of limited access are those "for which there is adequate or greater than adequate harvesting capacity currently in the fishery" and those that are managed under a state quota system. In accordance with Section 20-2.1-9(5) of the Commercial Fisheries Management Act, this management plan has been developed to identify fisheries that the Department of Environmental Management proposes to limit entry at current levels of effort and fisheries for which new licenses may be issued.

Regulations implemented by the Department of Environmental Management in 2002 created two endorsement categories for shellfish, quahog and non-quahog shellfish. The quahog category is reserved for this species, which the Department chooses to limit effort to multipurpose license holders and principal effort license holders with a quahog endorsement while species in the non-quahog category are available to new participants issued a basic commercial fishing license with a non-quahog endorsement.

In 2005, the quahog category remained the same as stock status and fishing effort warranted. A total of 50 new basic harvest quahog endorsements were issue in 2005 along with 177 non-quahog endorsements. The Division of Fish and Wildlife (Division) proposes issuing new licenses to harvest species in the non-quahog category as well as some limited entry in to the quahog category.

This management plan will be updated on an annual basis and the shellfish species will be evaluated with respect to stock status, current performance of the fishery, etc. A review of the number of quahog licenses renewed will be conducted in consideration of exit-entry ratios needed to attain desired effort levels. Based on this information, the Department will propose for public hearing a new management plan each year.

Bay Quahog Endorsement

Stock Status

The quahog resource in Narragansett Bay is currently fully exploited with biomass below that needed to produce maximum sustainable yield (MSY). A biomass dynamic model is used by the Rhode Island Division of Fish and Wildlife (RIDFW) to assess the overall stock in Narragansett Bay (Gibson 1999). The assessment was updated in 2005 to incorporate new landings and survey data and to adjust nominal license effort to include only active participants. The adjustment, based on RIDFW boat counts and analysis of dealer landing slips, reduced the latent effort bias in the catch per unit effort calculations. The new assessment results indicate that stock biomass in 2004 (17,778 MT) was only about 50% of that needed to support biomass at maximum sustainable

yield, B_{msy}, (39,037 MT) (Figure 1). Fishing mortality rates (F) have declined over the past decade and in 2004 was equal to 0.17, near the target $75\%F_{msy}$= 0.18 and the over fishing definition, F_{msy}= 0.23 (Figure 2).

Recent low biomass follows an extended period of heavy over fishing and was likely exacerbated by an increase in predation on benthic invertebrates. The reduction in F in recent years is related to declining effort because of the low stock levels and landings are currently well below the MSY level for a rebuilt stock (Figure 3). Projections indicate that the stock can increase in biomass at a moderate rate if F remains at current levels.

Although the assessment is conducted on a bay wide basis, resource status may vary spatially within the overall stock area depending on intensity of harvest, proximity to protected spawning beds, and hydrodynamic conditions, which disperse larvae. The distribution of quahogs in the bay is patchy and the fishery selectively exploits patches of higher value product (new recruit necks) as they appear. Because of these factors, the bay wide assessment represents an average condition and not necessarily those at a local level.

Management Program- Quahogs are managed entirely within state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. The Department, through the RIDFW, uses a set of management areas and a rotational transplant/harvest system to manage the resource. Permanent and conditional pollution closures restrict the fishery in addition to seasons, possession limits, and management closures.

A fishery management plan specifies that bay wide fishing mortality rates (F) should be maintained near the target level but below the F_{msy} over fishing definition to allow for biomass rebuilding (Ganz et al. 1999). This requires maintenance of fishing effort near current levels. The rotational harvest and transplant/spawner sanctuary program should be expanded to include more areas. Recent boat counts and analysis of dealer landings slips indicate that about 350 active shell fishers prosecute the quahog fishery. Gibson (1999) recommended a target fishing mortality rate equal to 75% of the F_{msy} value to preserve an adequate level of spawner biomass in the face of uncertainty. Since current active effort is sufficient to generate F at the target level on a bay wide basis, additional effort will move the fishery toward the over fishing level and reduce the rate of biomass rebuilding. New licenses will essentially compete for a limited yield with current licenses.

Fishery Management Goals and Objectives:

Goal- The following goal is consistent with the objectives of the Rhode Island quahog management plan (Ganz et al. 1999).

> *Rhode Island will have a healthy bay quahog resource and a fishery management regime which provides for sustainable harvest, cooperative management by stakeholders, and appropriate opportunities for fishery participation.*

Objectives-

1. Maintain fishing mortality rates and brood stock abundance at levels that minimize the risk of stock depletion and recruitment failure.
2. Conserve and rebuild quahog resources in Narragansett Bay with appropriate management strategies including transplanting, area closures and spawner sanctuaries.
3. Maintain existing social and cultural characteristics of the fishery wherever possible.
4. Provide for cooperative management with industry and efficient operation, consistent with biological objectives.
5. Provide for adaptive management that is responsive to unanticipated short term events or circumstances.
6. Provide for a simple, uniform and enforceable set of regulations.

Licensing Options and Recommendations:

In 2005, the Department issued 50 new quahog endorsements for the basic commercial fishing license. This decision was based on the Division assessment of license renewals, which indicated that 148 principal effort licenses issued in 2003 were not renewed in 2004. Due to uncertainty in the activity of the non-renewed licenses, an exit/entrance ratio of 3 to 1 was applied, resulting in the availability of the 50 new licenses. These licensees were restricted to half the possession limits allowed to principal effort and multipurpose license holders.

In 2005 the Department issued 630 principal effort licenses with quahog endorsements compared to 776 in 2004, a difference of 146. Principal effort license holders with quahog endorsements have access to full harvest levels. For student shellfish licenses there was a net decrease of 25 licenses (97 in 2004; 72 in 2005) and a net increase of 7 over 65 shellfish licenses (86 in 2004; 93 in 2005). These two licenses categories are restricted to basic harvest levels.

According to the most recent assessment for quahogs, rates of fishing mortality have been declining since 1999 and are currently below the estimated level that would lead to maximum sustainable yield (F_{msy}). Estimates of biomass are below maximum sustainable yield but have been constant since 1994. Since fishing mortality has declined to below F_{msy} and even though the biomass is below B_{msy}, the fishery could withstand a minimal increase in effort through the issuance of new licenses or quahog endorsements. Theoretically, as long as fishing mortality remains below F_{msy} biomass should increase. Based on this assessment and concerns over an ageing population of licensed quahog fishermen, issuance of new licenses or endorsements should be considered based on a conservative exit/entry ratio such as 3 to 1, as recommended by industry to recruit new participants into the fishery.

As specified in regulation, new entry into the quahog fishery will be facilitated initially through the issuance of quahog endorsements to basic commercial license holders. These license holders will be permitted to prosecute the fishery on a limited basis, i.e. half the possession limit allowed to multipurpose and principal effort license

holders. Applying the 3:1 ratio to the 148 licenses that were not renewed in 2004 as previously described results in 47 new quahog endorsements that will be available to basic commercial license holders in 2005. These figures are based only on the number of principal effort licenses with quahog endorsements that were not renewed and do not include multipurpose licenses that were not renewed.

Future Management Considerations-
DEM needs to continue work with industry to ensure a healthy quahog fishery consisting of resource sustainability and a licensing system that will maintain an active group of fishermen and facilitate entry of new participants.

Improvements in the landings data collection system along with RIDFW resource surveys will provide for innovations in management. Acquisition of fishery landings by market class and stratum will allow for stratum specific assessment and management. Fishery selectivity will be directly estimable and biological reference points can be refined to manage size composition in the harvest and spawning stock. In concert with transplanting and spawner sanctuaries, area specific regulation will be possible.

Non-Quahog Endorsement:

Stock Status- Other species of shellfish commercially harvested include soft-shelled clams, oysters, surf clams, and blue mussels. These species are not routinely assessed by RIDFW. Insufficient data is available to conduct analytical assessments. However, catch per unit effort indices suggest that soft-shelled clams and oysters are at high and medium levels of abundance, respectively (Figure 4). Since abundance seems relatively high for some species and lacking information on mortality rates, there is no basis to impose more restrictive regulations on the other shellfish endorsement. Oyster stock status should be reviewed in the future given the downturn in CPUE.

In August 2003 a substantial anoxic event occurred within Greenwich Bay resulting in the death of many organisms. Four species of fish, three crab species and one species of shellfish (soft-shelled clams) were observed dead from the event. An estimated one billion soft-shelled clams perished, mostly young of the year. The impact on the population is uncertain but caution should be taken in regards to fishing pressure.

Management Program- Steamer clams, oysters, blue mussels, and surf clams are managed in state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. Additional federal regulations apply to surf clams and ocean quahogs in the EEZ. The Department uses seasons and possession limits to manage the state waters fishery. Permanent and conditional pollution closures further restrict the fishery in addition to the above management measures.

Fishery Management and Licensing Recommendations- No changes are recommended to the management program for other shellfish until better data is available on resource status. New commercial licenses should have basic harvest levels equal to current licensees.

Literature Cited

Gibson, M.R. 1999. Assessment of quahogs (*Mercenaria mercenaria*) in Narragansett Bay: technical analyses in support of a bay wide quahog management plan. RI Division of Fish and Wildlife. Res. Ref. Doc. 99/2.

Ganz A.; Lazar N.; Valliere A.(1999). Narragansett Bay Quahog Management Plan. RI Division of Fish and Wildlife. Report to the Narragansett Bay Project and RI Marine Fisheries Council.

Figure 1. Estimated Exploitable Biomass of Quahogs in Narragansett Bay Relative to Bmsy

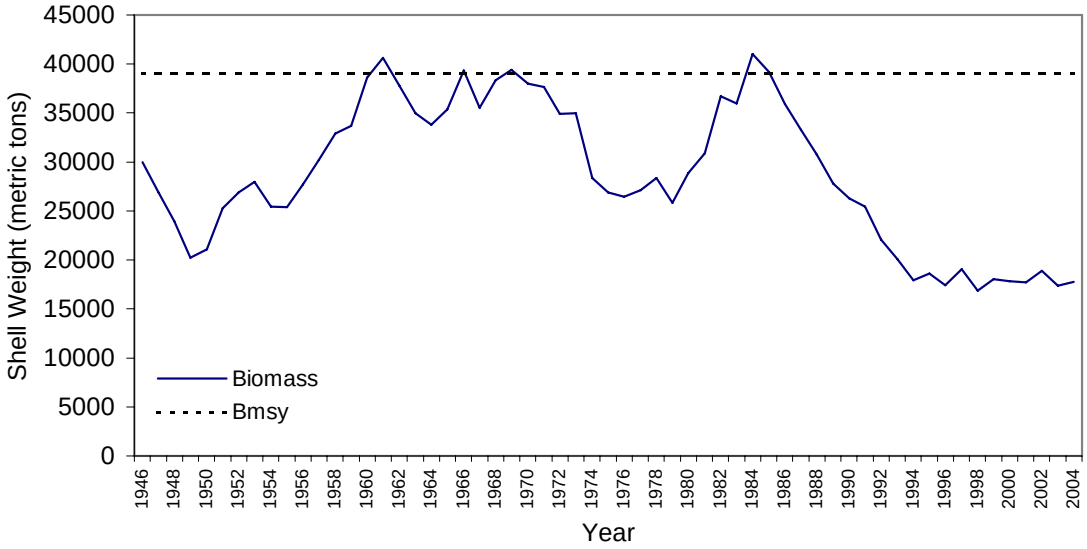

Figure 2. Estimated Rate of Fishing Mortality on Quahogs in Narragansett Bay Relative to Fmsy

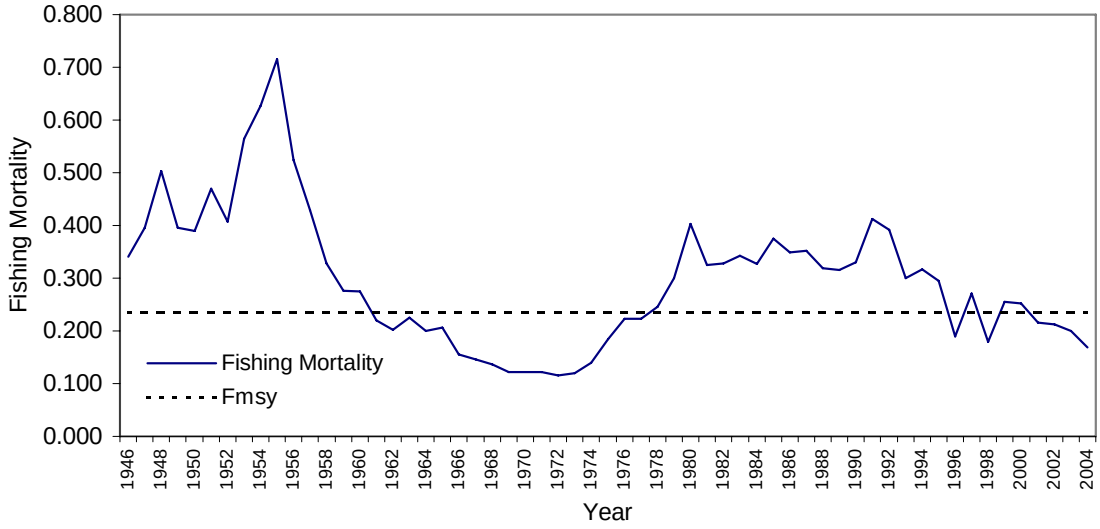

Figure 3. Commercial quahog landings in RI relative to estimated MSY

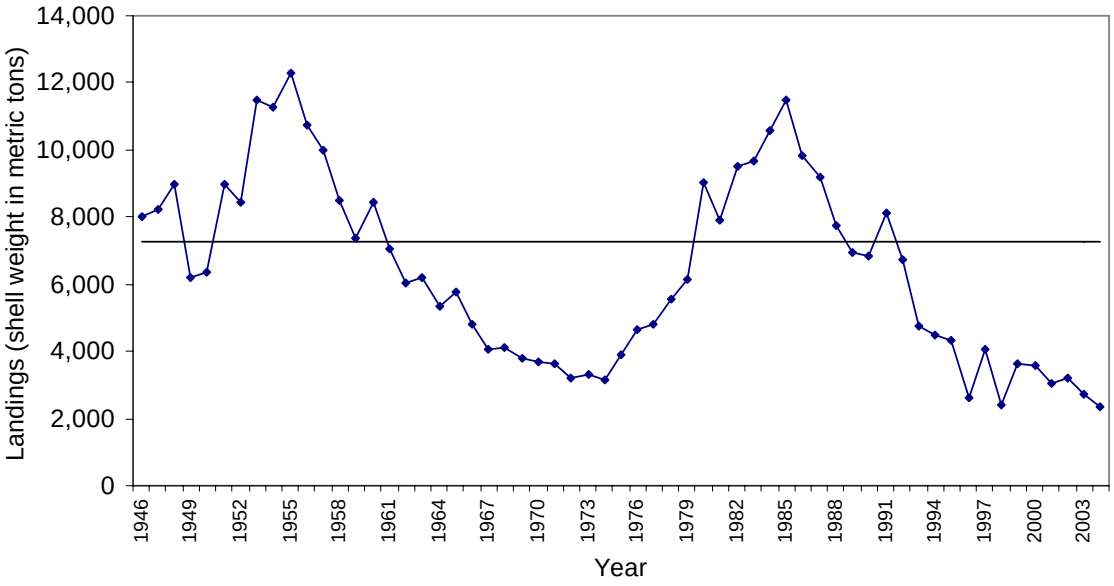

Figure 4. Landings of Soft-Shelled Clams and Oysters per Active License in RI